

Remarks/Arguments

This paper is submitted responsive to the office action mailed February 3, 2011. Reconsideration of the application in light of the accompanying remarks is respectfully requested.

Respectfully, this office action and prior office actions have contained so many misstatements of the teachings of the prior art that it is difficult to address each one. An interview has been simultaneously requested by telephone, and it is hoped that through such an interview the persistent incorrect perceptions of the claims and prior art can be addressed and prosecution effectively advanced.

In the office action, independent claims 1, 10 and 17 are rejected as obvious over Finn et al. in view of Steele.

Claims 1, 10 and 17 require, among other things, a cathode frame 28 with openings (Figure 2), an anode frame 18 with openings (Figure 2), and a plurality of fuel cells 20 positioned in the openings.

The Examiner acknowledges that Finn et al. do not disclose the plurality of cells in a plurality of openings, and relies upon the teachings of Steele for this teaching.

For the third office action, the Examiner has maintained that Steele teaches one or more openings as called for in the present claims. Currently, the Examiner has suggested this by re-printing Figure 3 on page 5 of the office action. The Examiner annotated Figure 3 to add the caption "Opening" with an arrow pointing at element 17 in the drawing. Element 17 in Steele is the anode layer, see for example column 6, lines 18-29. For a better understanding of what is shown in Figure 3, reference

should be had to Figures 1 and/or 2 in conjunction with Figure 3. Figure 2 shows a sectional view from the side of what is shown in Figure 3. See below:

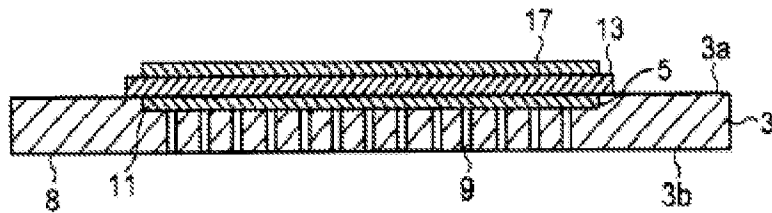


FIG. 2

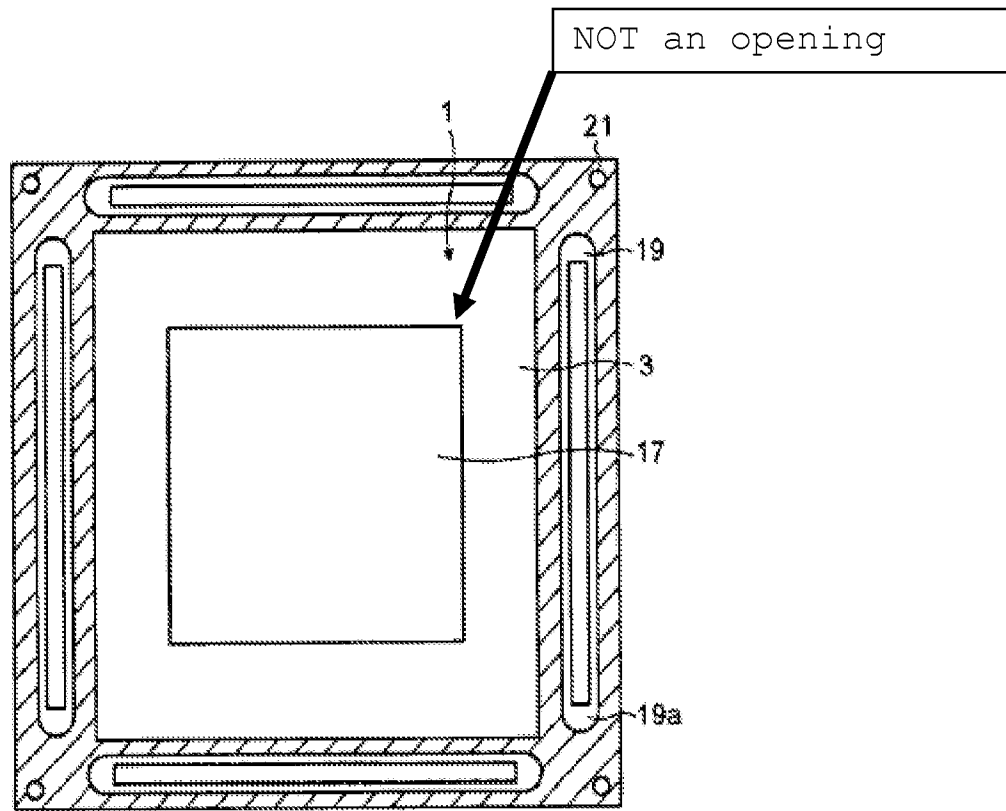


FIG. 3

The box in the center of Figure 3 is NOT an opening. It is anode layer 17 sitting on top of substrate 3. It is sincerely hoped that this issue can be reconciled and prosecution moved forward without this continued misunderstanding of the teachings of Steele.

It is noted that Steele does disclose porous regions in Figure 2 formed by apertures 9, but these apertures are (1) not at all the same as the openings called for in the present claims, and (2) not relied upon by the Examiner in the pending rejection in any event.

Nothing in the art of record discloses or suggests the claimed frame members having a plurality of openings each with fuel cells mounted in them.

Finn et al. teach only a single frame and opening. Even if one were to take the teachings of an array of cells as generally illustrated in Figure 5 of Steele, this still leaves an enormous gap between the teachings of Finn and Steele. It is an entirely different thing to have a fuel cell supported on a porous substrate as taught in Steele as compared to a fuel cell mounted in a frame opening as called for in the present claims, and in a single opening as disclosed in Finn. A person skilled in the art would recognize that the support for the fuel cell in Steele would be completely removed in attempting to adapt the teachings of Steele to Finn, and no guidance or suggestion is given as to how these teachings can be combined.

It is submitted that filling this gap to reach the claims of the present invention would not reasonably stem from the teachings set forth in these documents. Neither reference suggests the plurality of openings with a fuel cell positioned in each one, and the structures disclosed

in Finn and Steele are so diverse from each other that their combination cannot be taken for granted as a logical extension of the teaching of either reference.

The claimed structure is advantageous because it results in a structure which is more robust in the face of structural stresses. Nothing in Finn or Steele would suggest this because Finn does not address that issue at all, and Steele does so only from the standpoint of a fuel cell supported over a porous region, and not an opening as called for in the present claims. Absent some recognition of this benefit, the person skilled in the art simply does not have enough guidance to fill the gap between Finn and Steele, and combining these references to meet the claimed invention can only be improper hindsight reconstruction.

Based upon the foregoing, reconsideration of the rejection of claims 1, 10 and 17 based upon Finn et al. and Steele is respectfully requested.

By the present response, new independent claim 21 has been added and recites the various components of the invention as illustrated in Figure 2 in greater detail. One fuel cell is positioned in each opening, the seals are structurally recited, and interaction of the bipolar plate is also recited. None of this subject matter is disclosed or suggested in Finn or Steele or any other art of record.

Dependent claims 18-20 are believed allowable based upon dependency from claim 1 and the above arguments, and also in their own right.

Dependent claim 18 calls for a separate fuel cell to be positioned in each opening in the frame, and dependent claim 19 calls for the number of openings in a frame and the number of fuel cells positioned in those openings to be

the same. Both of these claims were added to help structurally address any remaining issues with the Examiner in connection with interpretation of Steele.

With respect to claim 18, the Examiner states that the "opening" of Steele is similar to the opening taught in Finn et al (See office action, page 8). This is not at all true, as set forth above. Steele has a plurality of apertures 9 which define a porous region for reactants to reach the fuel cell, and the "opening" shown in the Examiner's annotated Figure 3 is not an opening at all. There is no "similarity".

The Examiner goes on to state that:

"Steele et al. disclose that several of these solid oxide fuel cells positioned in an opening may be placed in an array, thereby forming multiple fuel cells positioned multiple openings (See fig. 5; col. 5 lines 11-40, col. 7 lines 25-60)" (See office action, page 8, lines 7-10).

As previously pointed out, Figure 5 of Steele et al. does not show any openings whatsoever. The dashed lines in Figure 5 of Steele are fuel cells 24, and an array of these fuel cells are carried on substrate 22. The cited portions of the text of Steele likewise make no mention whatsoever of multiple openings. There are a plurality of apertures 9, but as set forth above, these define a porous area which is structurally different from the subject matter of the present claims. Further, since the apertures 9 of Steele are clearly indicated as forming a porous region, it is completely in error to suggest that Steele has any hint whatsoever of "forming multiple fuel cells positioned [sic] multiple openings".

Claim 18 calls for one separate fuel cell to be positioned in each opening. Steele is not even remotely close to disclosing such subject matter.

With respect to claim 19, the Examiner again suggests that Steele discloses a solid oxide fuel cell "with an opening that allows for reactant to come into contact with the electrode 17, which is similar to the anode opening taught in Finn et al. Again, Steele discloses apertures forming porous regions, and has no openings which could have a fuel cell positioned in them.

The Examiner suggests that both Steele and Finn et al. teach that there should be one anode opening per fuel cell. He supports this statement by referring to Steele, Figure 5, col 5 lines 11-40 and col 7 lines 25-60. Nothing in any of these locations has anything whatsoever to do with "one anode opening per fuel cell" as stated by the Examiner. The only communication discussed in Steele is through the porous region formed by apertures 9, and obviously there are many such apertures forming a porous region for a fuel cell.

The Examiner also refers to Figure 47 of Finn, and paragraph 277. Figure 47 shows one large opening and a fuel cell, and also shows smaller openings for reactant flow. The text of paragraph 277 makes no mention at all of "one anode opening per fuel cell" as suggested by the Examiner.

The Examiner rejected dependent claim 20 by relying upon Finn and Steele and also US 5,283,754 to Yasuo et al. It is noted that claim 20 calls for more than just some generic cooling structure, but rather calls for an internal frame structure defining the plurality of openings, and the

cooling fluid channels are defined along the internal frame structure. This is as shown in Figure 3, channels 32.

Nothing in Finn, Steele or Yasuo even discloses or suggests the internal frame defining the openings, let alone cooling channels 32 on the frame. For a teaching of the internal frame structure, the Examiner points to the rejections of claims 10 and 13 (See office action page 10, lines 2-4). This is also a clear error, however, since neither of claims 10 or 13 recite the internal frame structures, and the Examiner does not mention these structures in his analysis of claims 10 or 13. Reconsideration of this logically flawed and incomplete rejection is requested.

An earnest and thorough effort has been made to respond to all points raised in the office action and to place the application in condition for allowance. If upon consideration of this paper the Examiner is of the opinion that issues remain which could be addressed by telephone interview, the Examiner is invited to telephone the undersigned to discuss same.

Based upon the foregoing, it is believed that independent claims 1, 10, 17 and 21 define patentably over the art of record. Dependent claims 2-7, 11-16 and 18-20 all depend directly or indirectly from claim 1 and are also believed to be allowable.

A fee for an extra independent claim has been authorized along with filing of this paper. It is believed that no additional fee is due. If any such fee is due, please charge same to Deposit Account 02-0184.

Respectfully submitted,

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